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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/774,232

**Applicant(s)**

QING ET AL.

**Examiner**

PELING A. SHAW

**Art Unit**

2444

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 6-13 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-13 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. Amendment received on 12/28/2009 has been entered into record. Claims 1 and 4 are amended. Claims 1-4, 6-13 and 15 are currently pending.
2. Applicant's submission filed on 07/13/2009 was entered. Claims 1, 3, 6-7, 9-10 and 13 were amended. Claims 5 and 14 were cancelled. Claim 15 was new.
3. Amendment received on 12/10/2008 was entered into records. Claim 1 was amended. Claim 14 was new.
4. Applicant's submission filed on 07/29/2008 was entered. Claims 1-13 were amended.
5. Amendment received on 01/30/2008 was entered into records. Applicant's amendment to the specification was reviewed and accepted. Claims 1-2, 4-6 and 8-12 were amended. Claim 13 was new.

***Priority***

6. This application has claimed a priority # CHINA 03106929.0 on 02/26/2003. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file. The filing date is 02/06/2004.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 20040165592 A1), hereinafter referred as Chen in view of Silverman (US 6731649 B1), hereinafter referred as Silverman.

- a. Regarding claim 1, Chen shows (claim 1) a method for providing service with guaranteed Quality of Service (QoS) in IP access networks, each of the IP access networks comprises an edge router connected to a backbone network, and an access network end device connected to subscribers (Figs 1 and 3, paragraph 3: guarantee application specific IP QoS via the combination of ATM switched virtual connections (SVCs) and permanent virtual connection (PVCs)), comprising: a1. a calling subscriber sending a request, to a service entity, for a service with guaranteed QoS (paragraph 94: source subscriber/QoS application sends a QoS connection setup message carriers QoS parameter to a network service agent, the network service agent translates and forward a signaling message includes QoS requirement); a. the service entity at network service control layer judging service rights of the calling subscriber after receiving the request (paragraphs 63-64: the network service agent provides authentication information to the connection server, authenticate the connection

server and each user to determine whether the user is authorized to establish SVS), obtaining a calling subscriber address and a called subscriber address (paragraphs 40-41 and 43: routing packet, policy routing instruction includes source IP network address and destination IP network address) and determining QoS requirement for a service (paragraph 19: determine number of VCs needed for QoS support; paragraph 30: QoS desired for a video conference; paragraph 94: setup message carries QoS parameter, signaling message includes QoS requirement), then sending a resource request to an edge router to request resources (paragraphs 91 and 95-96: signal SETUP message to edge ATM switch to determine the requested service is available) (paragraph 35: connection server 25 determines bandwidth available in ATU-Rs and DSLAMs; paragraph 56: connection server 25 ensures and grants bandwidth); b. the edge router (paragraph 97: ATM switch) of corresponding to the calling subscriber and a called subscriber computing bandwidth between a access network end device and the edge router after receiving the resource request (paragraphs 91 and 96: ATM edges switch determine whether there is enough available or equivalent bandwidth to accommodate the new connection; paragraph 97: ATM switch determine if can satisfy the requirement of connection based on traffic descriptor; paragraph 106: policy imposed on each connection based on the traffic descriptor) and determining whether there are enough resources for this service according to topology structure of the IP access network and bandwidth resources of each interface of the IP access network (paragraph 97: ATM switch determine if can satisfy the requirement of connection based on traffic descriptor; paragraph 106: policy imposed on each

connection based on the traffic descriptor; paragraph 35: connection server 25 determines bandwidth available; paragraph 56: connection server 25 ensures and grants bandwidth; paragraph 100: check whether there are enough network resources to accommodate this connection); if there are enough resources, executing c., otherwise rejecting the service request of the calling subscriber (paragraph 106: policy imposed on each connection based on the traffic descriptor; paragraph 56: connection server 25 ensures and grants bandwidth; paragraph 100: check whether there are enough network resources to accommodate this connection; when all CAC checks passed, select a PVC with the lowest service category and lowest bandwidth from PVC for connect, checks fail a standard release message is returned); and c. if there is an upward traffic stream sent from one of the calling subscriber and the called subscriber to the corresponding IP access network for this service (paragraph 35: subscriber's ATU-R and related DSLAM up-links), the corresponding edge router informing the corresponding access network end device of the QoS requirement for the service (paragraphs 94-95: signaling includes QoS requirement, SETUP message to ATM edge switch and the QoS application sends a QoS connection setup message through the API to the ATU-R; paragraph 97: ATM switch determine if can satisfy the requirement of connection based on traffic descriptor; paragraph 98: indicate initiation of the requested connection at the QoS requirements and VPI/VCI used; paragraph 99-101: receiving QoS and SEUP message from ATM edge to ATU-R via API), and the corresponding access network end device setting items of a stream classification table according to parameters for identifying the upward traffic stream

contained in the QoS requirement (paragraph 37: routing tables, routing entries; paragraph 43: type of service; paragraph 90: PVC information include QoS parameters); classifying the upward traffic stream sent from one of the calling subscriber and the called subscriber (paragraphs 94-95: signaling includes QoS requirement, SETUP message to ATM switch); and performing bandwidth limitation according to bandwidth parameters in the QoS requirement informed by the corresponding edge router for the upward traffic stream when matched with the items of the stream classification table (paragraph 35: the connection server performs a call admission control step to determine if sufficient available bandwidth exists in the ATU-Rs and DSLAM to accommodate the connection request; paragraph 39: traffic packets are transmitted from the source subscriber 10 over QoS connection; paragraph 97: ATM switch determine if can satisfy the requirement of connection based on traffic descriptor; paragraph 106: policy imposed on each connection based on the traffic descriptor; paragraph 98: indicate initiation of the requested connection at the QoS requirements and VPI/VCI used; paragraph 106: policy imposed on each connection based on the traffic descriptor), and processing the upward traffic stream when not matched as an upward traffic stream without guaranteed QoS (paragraph 43: best effort; paragraph 39: traffic packets are transmitted from the source subscriber 10 over QoS connection; paragraph 97: ATM switch determine if can satisfy the requirement of connection based on traffic descriptor; paragraph 106: policy imposed on each connection based on the traffic descriptor). Chen does not explicitly show if there is a downward traffic stream to be sent to one of the calling

- subscriber and the called subscriber from the corresponding IP access network for this service, the corresponding edge router setting priority in the corresponding IP access network for this service and forwarding the downward traffic stream to the corresponding subscriber according to the priority set by the corresponding edge router. However Chen does show (paragraph 43) traffic packet priority information carried in IP header; (paragraph 5) a DSL subscriber connected to ATM through point-to-point protocol over Ethernet (PPPoE); (paragraph 47) ATU-R 12 may functions like an Ethernet bridge with additional packet mapping capabilities and the switching is based on MAC addresses and mapping rules for outgoing PVC with QoS; (paragraph 90) service category (e.g. CBR, VBR-rt, VBR-nrt, UBR); (paragraph 100) select a PVE with the lowest service category; and (paragraph 101) ATM switch indicate via DSLAM initiation of the requested connection.
- b. Silverman shows (column 7, lines 11-14) tagging ToS with high priority when going through IP network; and (column 10, line 65-column 11, line 4) Gigabit Ethernet switches and Terabit routes use 802.1p&q, ToS and UDP port number to mark and identify packet priority in an analogous art of ATM edge node switching equipment utilized IP-VPN function.
- c. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to modify Chen's functions of interfacing ATM switch with source subscriber through an ATU-R in bridge mode, i.e. Ethernet connection, and DSLAM as per Figure 1 of Chen with Silverman's functions of tagging packet priority on a Gigabit Ethernet switch or Terabit route.



- d. The modification would have been obvious because one of ordinary skill in the art would have been motivated to explicitly use the packet priority tagging capability as per 802.1p&q shown by Silverman in the IP QoS connection over ATM connection as per Chen (Fig. 1) and Silverman (column 1, lines 39-51)'s teaching.
- e. Regarding claim 2, Chen shows wherein in step c, the edge router can transform service level into priority in the IP access network for the downward traffic streams and forward the downward traffic stream to the corresponding subscriber (paragraphs 90 and 97: levels of CAC based on service category, e.g. CBR, VBR-rt, VBR-nrt, UBR, select lowest service category and lowest bandwidth). Silverman shows wherein in step c, the edge router can classify the (downward traffic) stream first, after identifying the (downward) traffic streams, transform the identified traffic streams into priority in the IP access network and forward the (downward) traffic streams (column 7, lines 11-14: tagging ToS with high priority when going through IP network; column 10, line 65-column 11, line 4: Gigabit Ethernet switches and Terabit routes using 802.1p&q, ToS and UDP port number to mark and identify packet priority).
- f. Regarding claim 3, Chen shows before step c, further comprising: the edge router notifying the service entity that there are enough resources; and the edge router receiving confirmation information from the service entity (paragraph 97: ATM switch determine if can satisfy the requirement of connection based on traffic descriptor; paragraph 98: ATM switch sends a CALL-POCEDD; paragraph 101: ATU-R sends a CALL-PROCEED; paragraph 106: policy imposed on each

- connection based on the traffic descriptor; paragraph 35: connection server 25 determines bandwidth available; paragraph 56: connection server 25 ensures and grants bandwidth; paragraph 100: check whether there are enough network resources to accommodate this connection; checks fail, a standard release message is returned).
- g. Regarding claim 4, Chen shows further comprising a step of the edge router obtaining at least the topology structure of the IP access network and the bandwidth resources of each interface of the IP access network through static configuration or dynamic management protocol (Figure 1: connection server 25 sits on the edge of Internet 20; paragraphs 54 and 56: connection server manages the complex topology of any DSLAM, e.g. the total bandwidth available on a DSLAM trunk port (interface), pre-provisioned PVCs; paragraphs 40 and 43: routing packets, policy routing instruction includes protocol ID; paragraph 90: ATM switch 15 stores the following information in relation to each Extended Virtual UNI: a service-active identifier, which is set upon subscription to the service; a VPI/VCI range, identifying the VP and the range of contiguous VCs within the VP; a maximum equivalent bandwidth and an available bandwidth; and information regarding the PVCs pre-configured in the DSLAM 14; see also paragraph 33 of applicant's specification).
- h. Regarding claim 6, Chen shows after wherein the step c comprises: setting the downward traffic streams with high priority and then forwarding the downward traffic stream when the access network end device is an Ethernet (paragraph 43: traffic packet priority in IP header; paragraph 47: Ethernet bridge with packet mapping capabilities) or IP Digital Subscriber Line Access Multiplexer (DSLAM)

- (paragraph 54: priority bandwidth on the DSLAM up-link ports); and sending the downward traffic stream to Permanent Virtual Circuit (PVC) with guaranteed QoS for further forwarding when the access network end device is an ATM DSLAM (paragraph 3: guarantee application specific IP QoS via the combination of ATM switched virtual connections (SVCs) and permanent virtual connection (PVCs)).
- i. Regarding claim 7, Chen shows wherein parameters for identifying the upward traffic stream can be a four-element group, a five-element group or a seven-element group (paragraph 43: policy routing instruction syntax includes source IP network address, source network mask, destination IP network address, destination network mask, IP protocol ID, type of service (TOS), source port number, destination port number, gateway IP address, interface IP address, metric; see also paragraph 37 of applicant's specification).
  - j. Regarding claim 8, Chen shows further comprising: before receiving the QoS requirement from the edge router of the IP access network for the upward traffic stream, the access network end device processing the upward traffic stream sent from one of the calling subscriber and the called subscriber as an upward traffic stream without guaranteed QoS (paragraph 39: traffic packets are transmitted from the source subscriber 10 over either the new QoS connection or the default route to the ISP, based upon whether or not the packet originates from an application associated with the new QoS connection).
  - k. Regarding claim 9, Chen shows wherein for LAN access, L2 or L3 switch (paragraph 47: ATU-R functions like an Ethernet bridge; paragraph 49: PC sends traffic directly

to ATU-R over Ethernet, other packets are raw IP packets transported via the Ethernet connection) between the edge router and the access network end device of the corresponding IP access network forward the downward traffic stream according to the priority of the downward traffic stream (paragraph 88: ATU-R requires policy-based routing, enabling packets to be forwarded on different VCs to conform to the SVC parameters).

- l. Regarding claim 10, Chen shows further comprising: after the calling subscriber terminates the service, the edge router sending a QoS release command (paragraph 104: sends a standard release message to the ATM switch 15, the ATM switch 15 performs standard SVC release actions and adds bandwidth back to the available bandwidth) to the access network end device, and the access network device deleting corresponding items of the stream classification table according to the QoS release command (paragraph 104: deletes the corresponding policy routing entry in the routing table).
- m. Regarding claim 11, Chen shows further comprising: after the calling subscriber terminates the service, the edge router sending a QoS release command (paragraph 104: sends a standard release message to the ATM switch 15, the ATM switch 15 performs standard SVC release actions and adds bandwidth back to the available bandwidth) to the access network end device, and the access network end device deleting corresponding items of the stream classification table according to the QoS release command (paragraph 104: deletes the corresponding policy routing entry in the routing table).

- n. Regarding claim 12, Chen shows further comprising: after the calling subscriber terminates the service, the edge router sending a QoS release command (paragraph 104: sends a standard release message to the ATM switch 15, the ATM switch 15 performs standard SVC release actions and adds bandwidth back to the available bandwidth) to the access network end device and the access network device deleting corresponding items of the stream classification table according to QoS release command (paragraph 104: deletes the corresponding policy routing entry in the routing table).
- o. Regarding claim 13, Chen shows further wherein managing bandwidth according to bandwidth parameters comprises: performing bandwidth limitation, by the access network end device, for the upward traffic stream matched with the items of the stream classification table according to the bandwidth parameters (paragraph 35: the connection server performs a call admission control step to determine if sufficient available bandwidth exists in the ATU-Rs and DSLAM to accommodate the connection request).
- p. Regarding claim 15, Chen shows further comprising: the service entity sending QoS requirement including bandwidth, directions of traffic streams and parameters for identifying the traffic streams to the edge routers (paragraphs 91 and 95-96: signal SETUP message to edge ATM switch; paragraph 94: setup message carries QoS parameter, signaling message includes QoS requirement); and wherein the edge routers corresponding to the calling subscriber and the called subscriber computes the bandwidth between the access network end device and the edge routers comprises:

the edge routers computing the bandwidth between the access network end device and the edge routers according to the QoS requirement sent from the service entity (paragraph 96: ATM switch determine whether there is enough available or equivalent bandwidth to accommodate the new connection; paragraphs 54-56: enough bandwidth from DSLAM to subscriber; paragraphs 96-97 and 101: enough bandwidth to ATM switch).

Together Chen and Silverman disclosed all limitations of claims 1-4, 6-13 and 15. Claims 1-4, 6-13 and 15 are rejected under 35 U.S.C. 103(a).

***Response to Arguments***

8. Applicant's arguments filed on 12/28/2009 have been fully considered, but they are not persuasive.

- a. Applicant has argued that Chen does not disclose the limitation of "the service entity at network service control layer determining QoS requirement for the service" see (2<sup>nd</sup> paragraph on page 9 through 2<sup>nd</sup> paragraph on page 10 of current amendment). Chen has disclosed in paragraph 94, a service agent receives a QoS connection setup message, i.e. read upon item a1 of claim 1, the service agent translates the connection setup message and forward as a SVC signaling message, including AESA and QoS requirements and thus the service agent needs to know the QoS requirements of the QoS setup message in order to translate and forward a signaling message to include QoS requirements. Here, the signaling message is sent an ATM edge switch (paragraph 91 and 96) as in item "a" of claim 1 as well as shown in Fig. 1 of CHEN. This is to address applicant's argument on "the edge router corresponding to the calling subscriber and a called subscriber" (see paragraph 3 on page 10 of current amendment), i.e. source subscriber and destination subscriber in Fig. 1 of Chen.
- b. Applicant has amended the limitation of "determining whether there are enough resources for this service according to topology structure of the IP access network and bandwidth resources of each interface of the IP access network". Applicant argued that Chen does not have the limitation (see 2<sup>nd</sup> paragraph on page 11 through 1<sup>st</sup> paragraph on page 12 of current amendment). Examiner has reviewed the limitation in light of paragraph 36 of applicant's published specification. Examiner has

- reviewed the claim 4 rejection and reference cited from Chen as per item “g” in section 6 of Office Action mailed don 09/29/2009. Chen has specifically mention that the connection server is aware of the DSLAM topology, e.g. total bandwidth available on a DSLAM trunk port, and thus the connection server is aware of which PVSs are used to connect of the trunk port to the appropriate subscriber port. These reads on the limitation.
- c. Applicant has argued that it is the access network end device that performs the bandwidth limitation according to bandwidth parameters in the QoS requirement informed by the corresponding edge router for the upward traffic stream when matched with the items of the stream classification table (2<sup>nd</sup> paragraph on page 12 through 1<sup>st</sup> paragraph on page 15 of current amendment). Examiner has reviewed the claim 1 rejection, references cited from Chen. Chen has described the ATU-Rs as access network end devices (paragraphs 94-95 and 100-101). Chen has further disclosed in paragraphs 37-43 setting up routing tables, touring entries including QoS parameter in ATU-R. Thus indeed the ATU-R is the access network end device, not the ATM edge switch as per claimed invention and Chen.
- d. Examiner may error in citing references against specific limitations. However, one skill in the art of ATM/IP access network connection through DSLAM knows the ATM/IP standard functions allocated to access network device, e.g. ATU-R, ATM edges switches and connection manager. Chen is identified to contain and show substantially these standard features as well know in the art. Silverman is further used



Art Unit: 2444

to show the standard IP/ATM interface based upon 802.1p&q. Together, Silverman and Chen has all claimed invention.

***Conclusion***

9. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to the enclosed PTO-892 for details.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peling A. Shaw whose telephone number is (571) 272-7968. The examiner can normally be reached on M-F 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William C. Vaughn can be reached on (571) 272-3922. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Peling A Shaw/  
Examiner, Art Unit 2444